Chapter

1

TİSSUE CULTURE OF HELLEBORUS SP.

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HELLEBORUS SP. GENERAL INFORMATION AND ITS COMMERCIAL IMPORTANCE

Helleborus sp., is one of the remarkable major ornamental crop, inhabits across Mediterranean basin, Balkans, Central Europe and China (Henschke et al. 2015; Gabryszewska, 2017). These geophytes belongs to Ranunculacea family and comprise 22 species all around the world (Gabryszewska, 2017). Its species are diploid (2n=2x=32) perennial and containing rhizomes. The name of this genus originated from Greek words called ‘‘ellein’’ and ‘‘bora’’(Zonneveld, 2001; Meiners et al., 2011; Susek, 2016; Dhooghe et al., 2018). In addition to its ornamental properties, *Helleborus* sp. used as a medicinal and aromatic plant in different countries for several diseases such as meningitis, cancer (Čakar et al., 2011; Maior and Dobrota, 2013; Cheng et al., 2014; Schink et al., 2015), convulsion, hydrocephalus, dropsy and tumor (Öztürk, 2018). For instance, rhizomes of the *H. niger* exhibits hellebrin is the active compound that provides heart strengthening and diuretic properties (Watanabe et al., 2003; Tanker and Bingol, 1984). *Helleborus orientalis* was also used against several animal diseases in North Anatolia (Tanker and Bingol, 1984). Additionally, *Helleborus* species were used in drugs as an active substance, for instance, *H. foetidus, H. niger* and *H. viridis* for malaria care, *H. foetidus* and *H. bocconei* for toothache, *H. odorus* for skin erythema. *Helleborus orientalis* rhizomes comprise bufadienolide glycosides and steroidal saponins. Therefore *Helleborus* sp. known as their therapeutic potential owing to their bioactive compounds (Öztürk et al., 2018).

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CONCLUSION

Helleborus sp. are economically important and widely using in European Ornamental plant industry. *Helleborus niger*, *Helleborus orientalis* and other hybrid varieties are known to be mostly commericialized varieties in the markets. Since the propagation by seed and rhizomes have several problems in this genus, alternative methods have been tried to develop. Tissue culture is one of a significant time saving biotechnological tool to propagate plants clonally and to ease the breeding process. Although tissue culture methods have been applied in this genus so far, multiplication rate and in vitro propagation of these plants are still limited. Besides, interspesific breeding is mostly used in breeding processes of *Helleborus* sp. Therefore, combination of the conventional breeding techniques and tissue culture methods can be effective to obtain new varieties of *Helleborus* sp. Genotype dependency for rooting and acclimatization are other difficulties for the tissue culture of *Helleborus* sp.. In the present chapter, tissue culture studies of the *Helleborus* sp. were explained in detail, reviewed and chronologically listed.

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